Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
SSRP-99/15		

4. Title and Subtitle	5. Report Date
Seismic Performance of Hollow Rectangular Reinforced Concrete Bridge Piers with Highly-Confined Corner Elements; Phase I Flexural Tests, Phase II Shear Tests	August 1999 – February 2002
	6. Performing Organization Code UCSD
7. Author(s) Eric M. Hines, Frieder Seible, M.J. Nigel Priestley	8. Performing Organization Report No. UCSD / SSRP-99/15
9. Performing Organization Name and Address Department of Structural Engineering School of Engineering University of California, San Diego La Jolla, California 92093-0085	10. Work Unit No. (TRAIS)
	11. Contract or Grant No.
12. Sponsoring Agency Name and Address California Department of Transportation Engineering Service Center 1801 30th St., West Building MS-9 Sacramento, California 95807	13. Type of Report and Period Covered Final Report -
	14. Sponsoring Agency Code

15. Supplementary Notes

Prepared in cooperation with the State of California Department of Transportation.

16. Abstract

Large scale tests were conducted to investigate the integral behavior of structural walls with highly-confined boundary elements. Five test units with similar geometry and longitudinal reinforcement were loaded cyclically in single bending. Design parameters included column length, transverse reinforcement in the wall and wall thickness.

Test results are compared with predictions of deformation capacity and shear capacity. Experimental plastic hinge lengths are derived for both tall and short columns. The steel contribution to shear capacity is evaluated based both on the action of the transverse bars in the wall and on that of the boundary element spirals. Web crushing capacity is discussed in relation to the critical compression struts that transfer shear between the compression and tension boundary elements in the plastic hinge region.

17. Key Words	18. Distribution Statement
reinforced concrete, structural wall, boundary element, hysteresis, plastic hinge length, web crushing	Unlimited

19. Security Classification (of this report)	20. Security Classification (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	286	